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Notes on some benthic Mollusca from Natal and Moçambique, with descriptions of new species and subspecies of Calliostoma, Solariella, Latiaxis, Babylonia, Fusinus, Bathytoma and Conus

by

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SYNOPSIS

New species: *Calliostoma (Kombologion) scotti*, *Solariella (Microgaza) meyeri* (Trochidae); *Latiaxis scobina* (Magilidae); *Babylonia pulchrelineata* (Buccinidae); *Fusinus cratis* (Fasciolariidae); *Bathytoma (Parabathytoma) visagei* (Turridae);.

New subspecies: *Conus orbignyi aratus* (Conidae).

Status revised: *Latiaxis kylix* Barnard, 1959, is a subspecies of *L. mawae* (Griffith & Pidgeon, 1834) (Magilidae); *Latirus mosselensis* Tomlin, 1932, is a valid species (Fasciolariidae).

New combination: *Fusus subcontractus* Sowerby, 1902, is a *Columbarium* (Columbariidae).

New records for Natal/Moçambique: *Tugurium giganteum* (Schepman, 1909) (Xenophoridae); *Tanea hilaris* (Sowerby, 1914) (Naticidae); *Eudolium pyriforme* (Sowerby, 1914) (Tonnidae); *Fusitriton murrayi* (E. A. Smith, 1891) (Cymatiidae); *Crassispira aesopus* (Schepman, 1913), *Marshallena philippinarum* (Watson, 1882) (Turridae); *Amygdalum politum* (Verrill & Smith, 1880) (Mytilidae); *Poromya gloriosa* Prashad, 1932 (Poromyidae).

Radulae figured: *Calliostoma scotti*, *Solariella meyeri*, *Tugurium giganteum*, *Eudolium pyriforme*, *Bathytoma visagei*, *Conus orbignyi aratus*.

Our limited knowledge of the Natal benthic Mollusca is based mainly on the collections made during 1900–1 by the Cape government trawler, the s.s. *Pieter Faure* (cf Barnard 1964). However, save for three hauls, all dredging operations were carried out within the 100-fathom mark. The subsequent discovery of commercially exploitable populations of crayfish (*Palinurus delagoae* Barnard), langoustines (*Nephrops andamanicus* Wood-Mason) and pink prawns (*Hymenopenaeustriarthrus* (Stebbing)), at depths of 150–250 fathoms and beyond, has led to the incidental recovery of many exceedingly interesting Mollusca.

The present paper is based largely on such material, kindly made available by a number of collectors whose assistance is gratefully acknowledged below. A particular debt of gratitude is owed to Mr George Scott of Westville, who has generously made available a valuable cross-section of the molluscan material brought in by his trawler over the past year. There still remains a large number of species which will be dealt with in subsequent papers, when better series, relevant literature and comparative material from other parts of the world are available. A discussion of the zoogeographical implications of this fauna will be left in abeyance until such time.

In the following text 'Natal Museum' has been abbreviated where convenient to 'N.M.'

CLASS GASTROPODA

Family Trochidae

Calliostoma (Kombologion) scotti sp. nov. Figs 1 a–c, 2 a, b.

Description: Shape coeloconic, imperforate, wider than high; spire whorls concave, with periphery just above suture, base of body whorl convex, its periphery angular; suture shallowly channelled on apical whorls, but indistinct on later ones, due to its being tightly adpressed to the peripheral keel of the preceding whorl.

Teleoconch whorls 9. First whorl with a number of exceedingly fine lirae, of which two are stronger than the rest; they are crossed by fine axial riblets, which form granules at their intersections with the main lirae. By the second whorl a third cord has developed, the initial fine sculpture becoming obsolete; of the three cords the basal one is the strongest, the median one the weakest; on this whorl the axial riblets, which are thin and oblique, number 15–20, but subsequently evanesce. Towards the end of the third whorl a 4th and 5th lirae are interpolated above and below the median one; the number of lirae continually increases by interpolation until by the end of the last whorl there are 13–16 fine lirae on the concave face of the whorl; these are subequal in strength, and bear small, slightly oblique gemmules. The first lira immediately below the suture normally remains stronger than those on the face, and bears larger gemmules; it may sometimes be bisected by a median groove, and on occasion may become rather weak. The original basal lira (which bears rather sharp gemmules) remains stronger than those above it, and may be compounded by the fusion of interpolating lirae; it becomes separated from the suture by the development of two initially thin lirae which increase in strength and fuse to form a conspicuous medially bisected keel (sometimes elaborated by the fusion of further lirae as well); these lirae bear numerous nodules which give them a serrulate appearance. In some the peripheral keel projects over the succeeding suture, giving the whorls a pagoda-like appearance, but in most the peripheral and subsutural cords are nearly equal in strength. Base with 23-32 spiral lirae (usually with intermediaries); as a rule these are weakly gemmulate, save for the median ones. Whole surface of shell with a silky iridescence. Interstices with fine, oblique, growth striae.

Protoconch of about one smooth whorl, apically submerged, diameter 0,55 mm.

Ground colour orange-buff, sometimes with a slightly pinkish cast, gemmules and whole of base paler, protoconch and infrasutural lirae often white.

Dimensions: 34×36,8 mm (holotype); 33,3×38,5 mm, 30,4×35,5 mm (paratypes).

Operculum typically trochoid, almost circular in outline.

Animal (in preservative) mottled with apricot colour, tentacles and snout deep orange. Epipodial tentacles four, plus a lobe-like flap behind the head, as in *Calliostoma ziziphinum* (Linn.) (cf. Fretter & Graham 1962: fig. 71).

Jaws rounded, thick, darkish brown, scales very minute, anteriorly rather setose, although not forming a conspicuous fringe.

Radula with four lateral plates and 35 marginals, of which the inner one is only moderately thicker than the others. The latter feature, together with the form of the jaws, shows *scotti* to be referable to the subgenus *Kombologion* Clench & Turner, 1960.

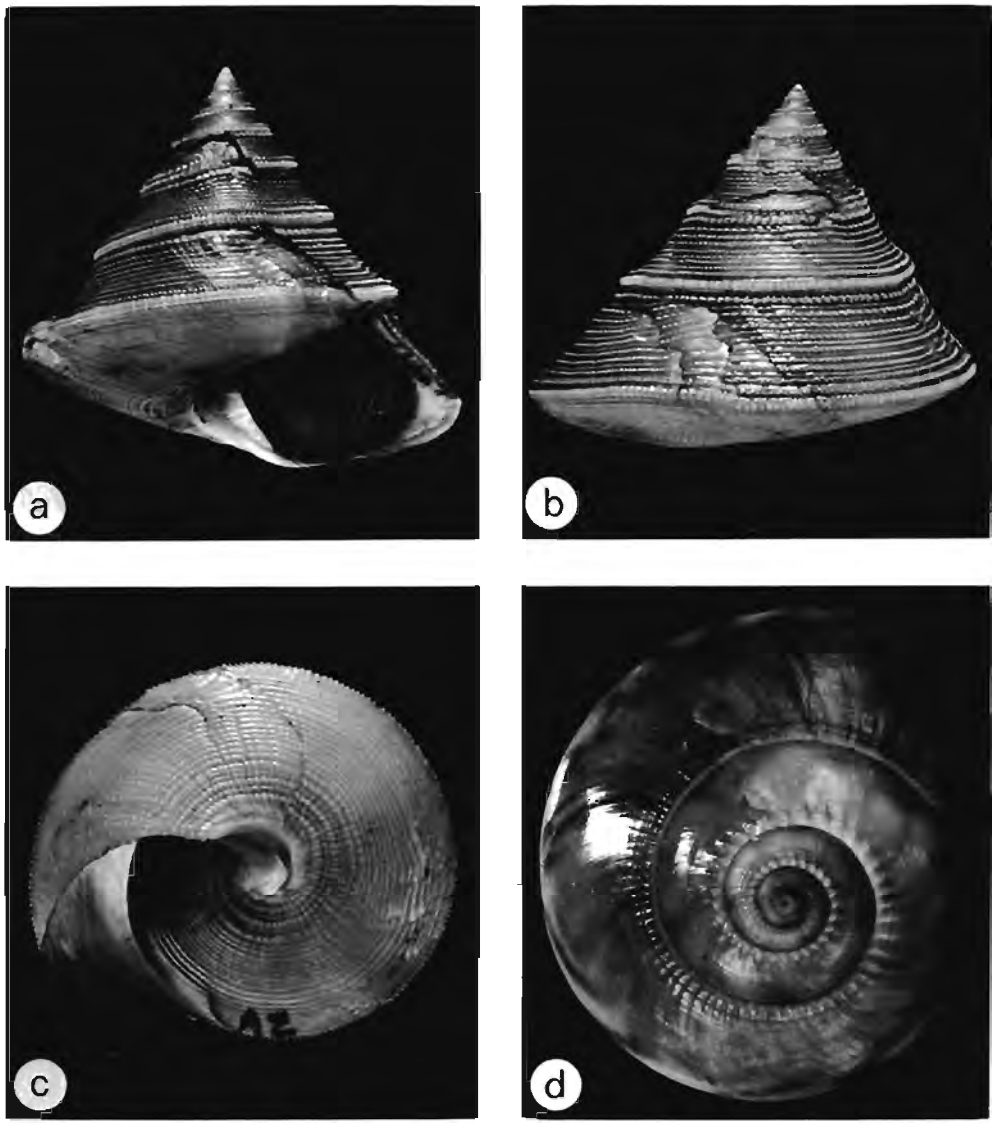

Fig. 1. a, *Calliostoma scotti* sp. nov., holotype; dimensions 34 × 36,8 mm. b, c, Paratype of same, abapertural and basal views, dimensions 30,4 × 35,5 mm. d, *Solariella meyeri* sp. nov., holotype, apical view, dimensions 10,2 × 15,4 mm.

Distribution: Off Ponta da Barra Falsa (Moçambique, 22° 55′ S., in coll. Mr & Mrs R. W. Eastwood) to off Durban (type locality), in 230–300 fathoms.

Type material: Holotype (N.M. 9997), trawled 25 miles south-east of Durban Bluff in 23 fathoms, leg./don. G. Scott. Paratypes six; off Inhaca Island (N.M. A2) in 260-280 fathoms, one, don. A. Z. Visagé; off Inhaca Island (N.M. 7873) in 240–270 fathoms, one,

apex broken down, don. R. Cruickshank: locality uncertain, probably off Moçambique, (N.M. 8960) one, don. M. Meyer; ? locality (N.M. 9998) three, don. R. Cruickshank. Radula slides 109 (holotype) and 110 (paratype A2).

Remarks: The closest relative of this striking new species seems to be *Calliostoma formosense* E. A. Smith, 1907, from the south China Sea, which differs in its flat-sided whorls, less convex base and distinct brown markings. *C. chuni* (Von Martens, 1903) from off Somalia also shows a general resemblance to *scotti*, but has flattened whorls which are smooth save for gemmulate lirae in the peripheral, subsutural and circumumbilical regions.

Named in honour of Mr George Scott.

I am indebted to Mr D. Aiken for his accurate and detailed figures, here reproduced, of the dentition of this and the following species.

Solariella (Microgaza) meyeri sp. nov. Figs 1 d, 2 c, 3 a, b, 4 a

Description: Teleoconch whorls 5½. Height equal to approximately ¾ of width. Whorls flattened or convex with a well-impressed suture. Umbilicus wide and deep, with almost vertical sides and an angular margin. Aperture rather ovate, columella thin, slightly reflected, rather flattened, meeting base of labrum at a slight angle.

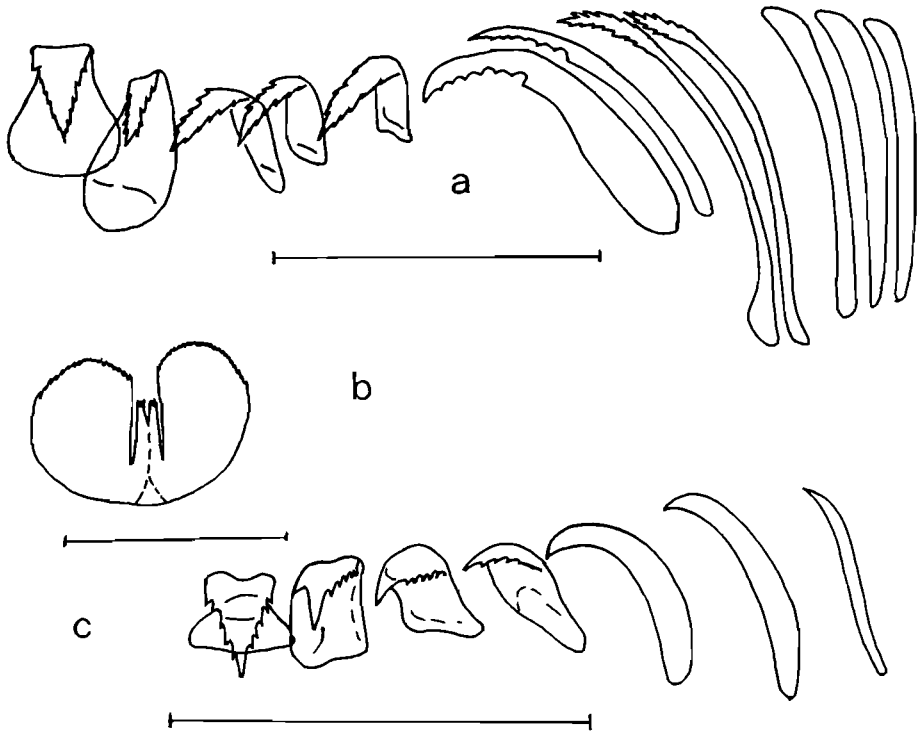

Fig. 2. a, Radula of *Calliostoma scotti*, line = 0,5 mm. b, Outline of jaws of same, line = *ca.* 4 mm. c, Radula of *Solariella meyeri*, line = 0,5 mm.

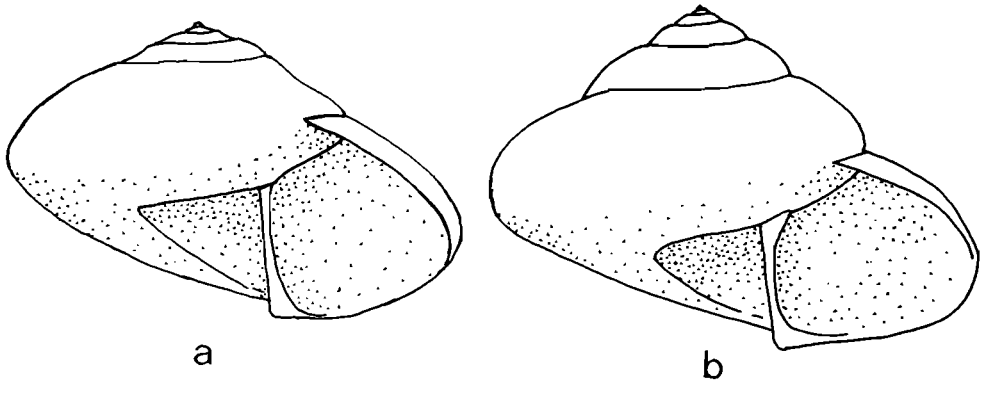

Fig. 3. *Solariella meyeri*, diagrammatic adapertural views of (a) holotype and (b) paratype; sculpture not indicated.

First and second teleoconch whorls with five well-developed but narrow spiral lirae, of which the subsutural one is the weakest; the second lira forms a weakly tabulate shoulder. On the second whorl a series of axial plicules develop below the suture, producing a feebly coronated effect on the shoulder lira. On the third whorl a series of 29–34 rounded nodules develop just below the suture. The other sculpture may rapidly evanesce after this stage, save for rather distinct growth lines and traces of fine spiral striae. On the other extreme additional spiral lirae may develop on the third whorl, producing a total of eight cords, although even then from the 4th whorl the spiral sculpture begins to disappear from the face of the whorl, leaving only the series of subsutural plicules (bearing a row of nodules) which become obsolete towards the end of the body whorl, and a series of spiral lirae at the periphery, of which one or two show above the suture on the spire; thin spiral lirae also occur on the base, diappearing medially. The umbilicus is always encircled by a series of axial plicae (40–60 in number), which are shallowly incised by 1–5 spiral grooves, which may produce a weakly tuberculate appearance, particularly on the umbilical rim. These plicules continue down the wall of the umbilicus, where they may be crossed by weak spiral lirae

Protoconch of just over one smooth, rounded whorl, white in colour, with a diameter of 0,3 mm.

Colour light brown, subsutural coronations paler, sometimes white, base off white. Whole surface more or less iridescent. This is particularly marked in the holotype, where the peripheral region of the body whorl shows a deep blue to green iridescent sheen.

Dimensions: 10,2×15,4 mm (holotype), 11,6×15,9 mm (paratype).

Operculum thin and pale, typically trochoid.

Radula resembling that of *Solariella* (*Microgaza*) *undata* Sowerby, 1870, as figured by Barnard (1963*a*: fig. 10 b); marginal plates twelve in number.

Distribution: Known only from the type locality, said to be off the Tugela River mouth (about 29° 11′ S.) in 75 fathoms. Unfortunately there is now some doubt about the depth and locality data, as this area proves to be foul ground, never worked by trawlers.

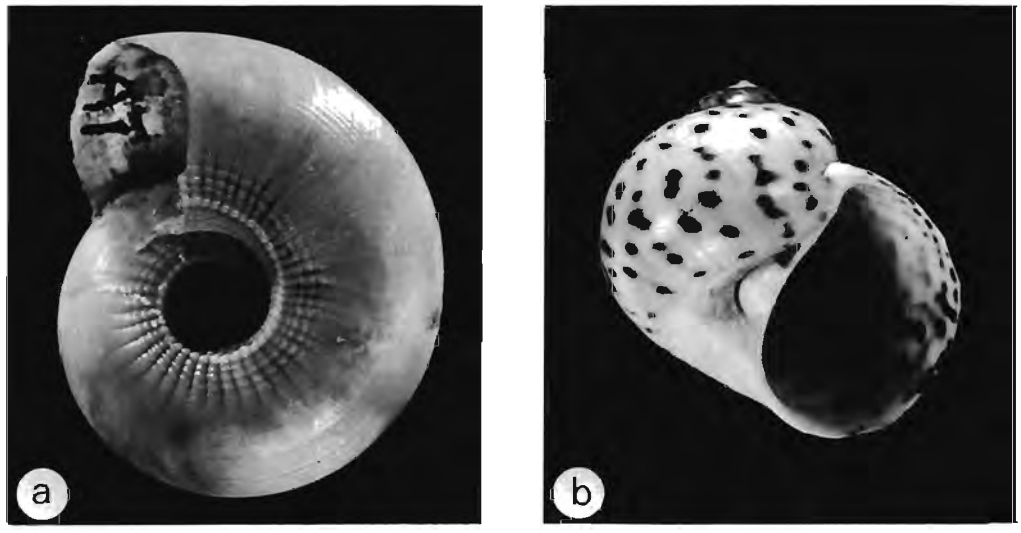

Fig. 4. a, *Solariella meyeri*, basal view of holotype. b, *Tanea hilaris* (Sow.) from off Durban in 150 fathoms, dimensions 23,6 × 23,4 mm.

Type material: Holotype: N.M. A1, locality and depth as given above, don. M. Meyer. Paratype: N.M. A5, one, same locality and collector, but depth unknown.

Named in honour of the collector, Mr M. Meyer of Durban.

Remarks: Like most of the southern African species of the subgenus *Microgaza* Dall, 1881, the present species shows much individual variation in shape and sculpture. Although only three examples (the third in the collection of Mr Meyer) have been examined, their common characters seem distinct enough to warrant recognition of a new species. It is exceedingly close to *S.* (*M.*) *aquamarina* Melvill (1909: 80, pl. 5, fig. 2) from the Saya de Malha Banks, between Mauritius and the Seychelles, as far as one can judge from the skeletal description and figures. However, *S. meyeri* seems to differ in its light brown colour, larger size, higher spire, non-canaliculate suture and straighter columella. Of South African species, it superficially resembles the *congener* form of *S.* (*M.*) *laevissima* (Von Martens, 1889) (cf. Barnard 1963*a*: 239), but differs in the distinct spiral sculpture of the early whorls and the subsutural coronations of later ones. *S.* (*M.*) *multistriata* Thiele, 1925, and *S.* (*M.*) *agulhasensis* Thiele, 1925, both have much finer and more persistent spiral sculpture, and lack the subsutural coronations of *meyeri*.

Family Xenophoridae

Tugurium (*Trochotugurium*) *giganteum* (Schepman, 1909) Fig. 5.

Xenophora gigantea Schepman, 1909: 204, pl. 13, fig. 1.
Trochotugurium giganteum; Habe, 1953: 174, figs 1, 2; 1964: 57, pl. 16, fig. 7.

This striking species, previously known from off Indonesia (Schepman) and Japan (Habe), has been frequently dredged in Moçambique waters in recent years. Specimens are in the Natal Museum (don. Mr & Mrs R. W. Eastwood, leg. A Krige) from off Ponta de Barra Falsa in 290 fathoms, and from an area about 130 miles east of Inhaca and 60

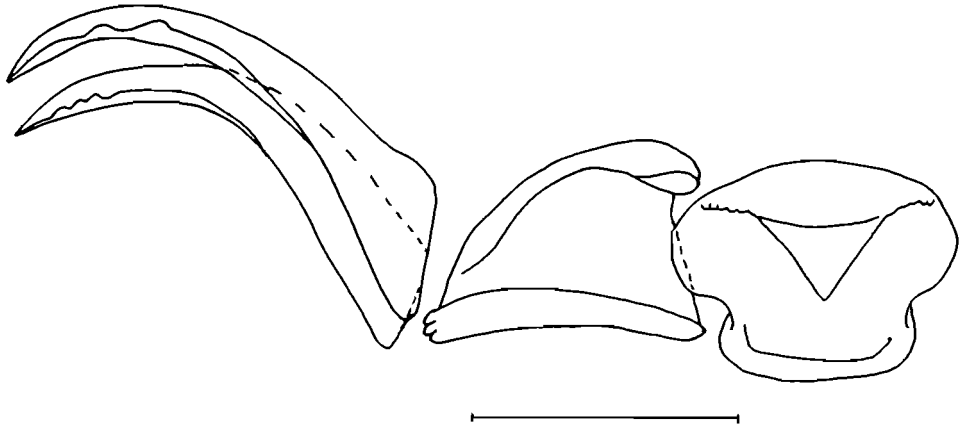

Fig. 5. Radula of *Tugurium giganteum* (Schepman) from off Barra Falsa in 290 fathoms; line = 0,5 mm.

miles south of Ponta Zavora in 270 fathoms. As yet it does not appear to have been obtained further south in Natal waters. The largest shell measured has dimensions (excluding attachments) of 63 × 111 mm.

The operculum of *T. giganteum* bears fine radial striae which form a microrugose sculpture in combination with the growth lines. This is in agreement with Thiele's definition of *Tugurium* P. Fischer, 1880 (1929: 250). The dentition of the genus does not appear to have been described, but the radula of *T. giganteum* was found to differ from that of *Xenophora conchyliophora* (Born, 1780) (Troschel, 1856–63: pl. 16, fig. 7, 7 a, as *X. trochiformis* Born), *X. pallidula* (Reeve, 1843), and *X. corrugata* (Reeve, 1843), in the feeble and irregular lateral denticles of the rachidian plate, these being few and coarse in *Xenophora*.

Family Naticidae

Tanea hilaris (Sowerby, 1914) Fig. 4 b

Natica hilaris Sowerby, 1914*a*: 6, text fig.
Notocochlis hilaris; Azuma, 1961: 202, pl. 14, fig. 9 (radula); Kira, 1962: 41, pl. 18, fig. 8
Tanea hilaris; Oyama, 1969: 87; Kuroda *et al.*, 1971: 118, pl. 19, figs 5, 6.

This species, supposedly endemic to Japan, has been trawled by Mr Scott in 150 fathoms off Durban. All examples brought in so far have been inhabited by hermit crabs.

The chevron-shaped, unicuspidate rachidian of *hilaris*, as figured by Azuma (loc. cit.), shows it to be a true *Tanea*, and the first member of the genus so far reported from Southern Africa.

Family Tonnidae

Eudolium pyriforme (Sowerby, 1914) Figs 6, 7, 8

Dolium pyriforme Sowerby, 1914: 37, pl. 2, fig. 14.
Eudolium pyriforme; Habe, 1958: pl. 3, fig. 8 (radula); Kira, 1962: 59, pl. 23, fig. 5; Kuroda *et al.*, 1971: 135, pl. 37, fig. 4.
Tonna pyriformis; Kilias, 1962: 16, pl. 12, fig. 7.

At depths of over 200 fathoms this characteristic species largely replaces the shallower water *Eudolium crosseanum* (Monterosato, 1869) in the Durban area. Material is in the

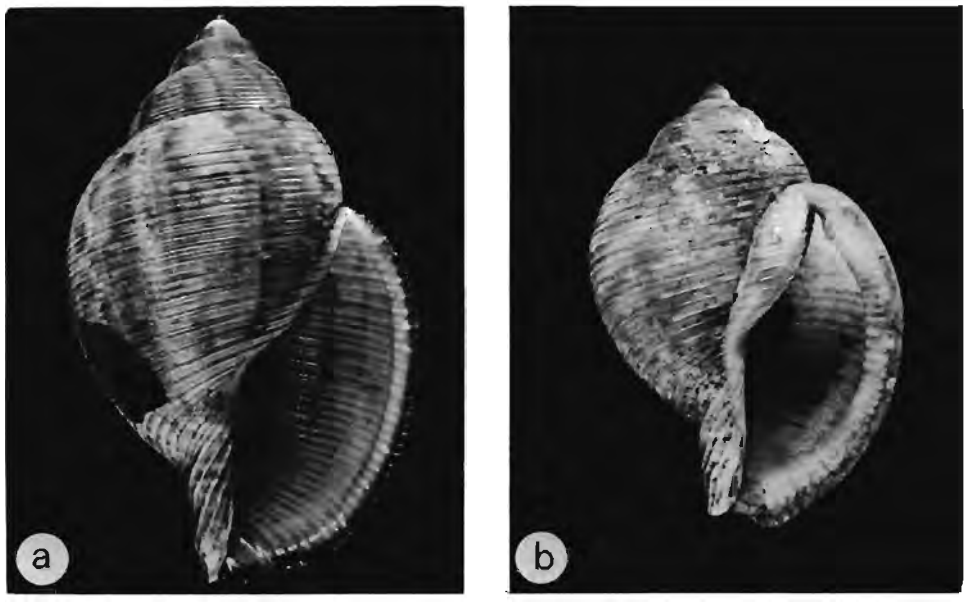

Fig. 6. *Eudolium pyriforme* (Sow.) from off Durban in 230 fathoms. a, Dimensions 114,3 × 66,77 mm; b, 43,3 × 30,2 mm.

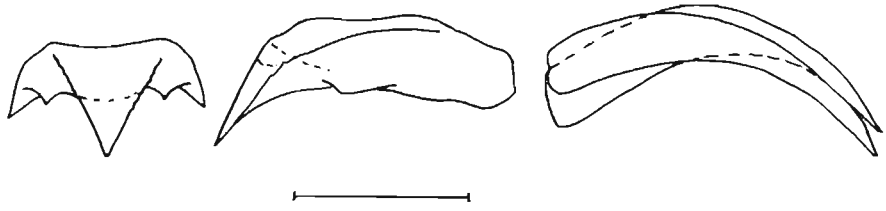

Fig. 7. Radula of *Eudolium pyriforme*, line = 0,5 mm.

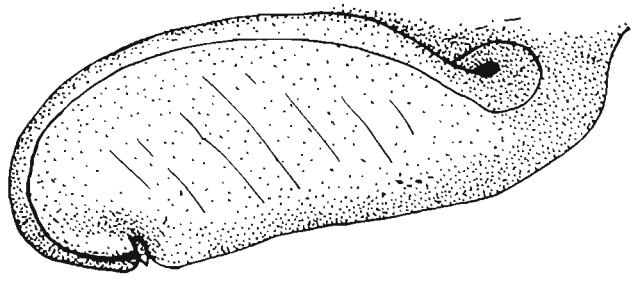

Fig. 8. Verge of *Eudolium pyriforme*.

Natal Museum collection from about 230 fathoms, 25–26 miles due east of Durban and in the Tongaat area, bottom of soft mud (leg. G. Scott). *E. pyriforme* is known chiefly from the Sino-Japanese region (type locality Kii, Honshu, Japan), but is also recorded from off New South Wales (Garrard 1961) and has recently been trawled off northern North Island, New Zealand (Dr A. G. Beu, *in litt.* 18.xii.72). The known distribution pattern is therefore comparable to that of *Latiaxis mawae* (*vide infra*). Indeed, it even seemed feasible initially to separate the Natal population of *E. pyriforme* at the subspecific level, on account of the large size attained (nearly twice that of Japanese shells), the generally higher spire and the straighter columella. However the species is a very variable one, and odd individuals agreeing exactly with typical Pacific examples do occur locally, so that the species must be regarded as monotypic. Two extremes are here figured. To some extent the differences so often observed may perhaps be correlated with bathymetric range, the species living in Japan at a depth of only 100–200 m, i.e. 55–110 fathoms (Kuroda *et al* 1971), and the Australian and New Zealand specimens having been collected at depths of 75 and 50–60 fathoms respectively, in contrast to the relatively great depths (200–250 fathoms) inhabited by the Natal form.

The animal has the sole of the foot white, the sides speckled with brown, and the head is dull violaceous. In the only male available the verge resembles that of *crosseanum*, save that the hollow into which the seminal groove opens contains a single short, slender flagellum which is lacking in *crosseanum*.

Radula resembles that of *E. crosseanum* (cf. Turner 1948: pl. 75, fig. 5), save that the fine denticles on the cusps of the rachidian and lateral plates are rather feeble, particularly in adult specimens.

Family Cymatiidae

Fusitriton murrayi (E. A. Smith, 1891)

Argobuccinum (*Fusitriton*) *murrayi*; Barnard, 1963: 22 (references and synonymy), fig. 2 b.

Off Bazaruto Island in 300 fathoms, two dead (N.M., don. Mr & Mrs R. W. Eastwood, leg. A. Krige). Previous easternmost record Cape Recife (Barnard, also N.M.: R.K. coll., 180 fathoms).

Family Magilidae

Latiaxis mawae kylix Barnard, 1959, **stat. rev.** Fig. 9 b

Latiaxis kylix Barnard, 1959: 188, fig. 37.

Two dead shells, almost identical to the well-known Sino-Japanese *Latiaxis mawae* (Griffith & Pidgeon, 1934), have been trawled by Mr Scott south-east of Durban Bluff in 150 fathoms (N.M. 9922). They differ, however, in the total absence of supraperipheral spiral sculpture on the early whorls, very feeble lirae appearing only on the 4th or 5th whorl. In contrast, all specimens examined from Japan and Taiwan show distinct spiral lirae on the shoulder slope of all whorls, these being visible to the naked eye on the later whorls of adult examples.

Barnard's *Latiaxis kylix* was founded on a 10 mm juvenile of three teleoconch whorls dredged off the Bluff (Cape Natal) in 54 fathoms. His figures and description correspond exactly to the early whorls of the present material (notably in the one example where the last

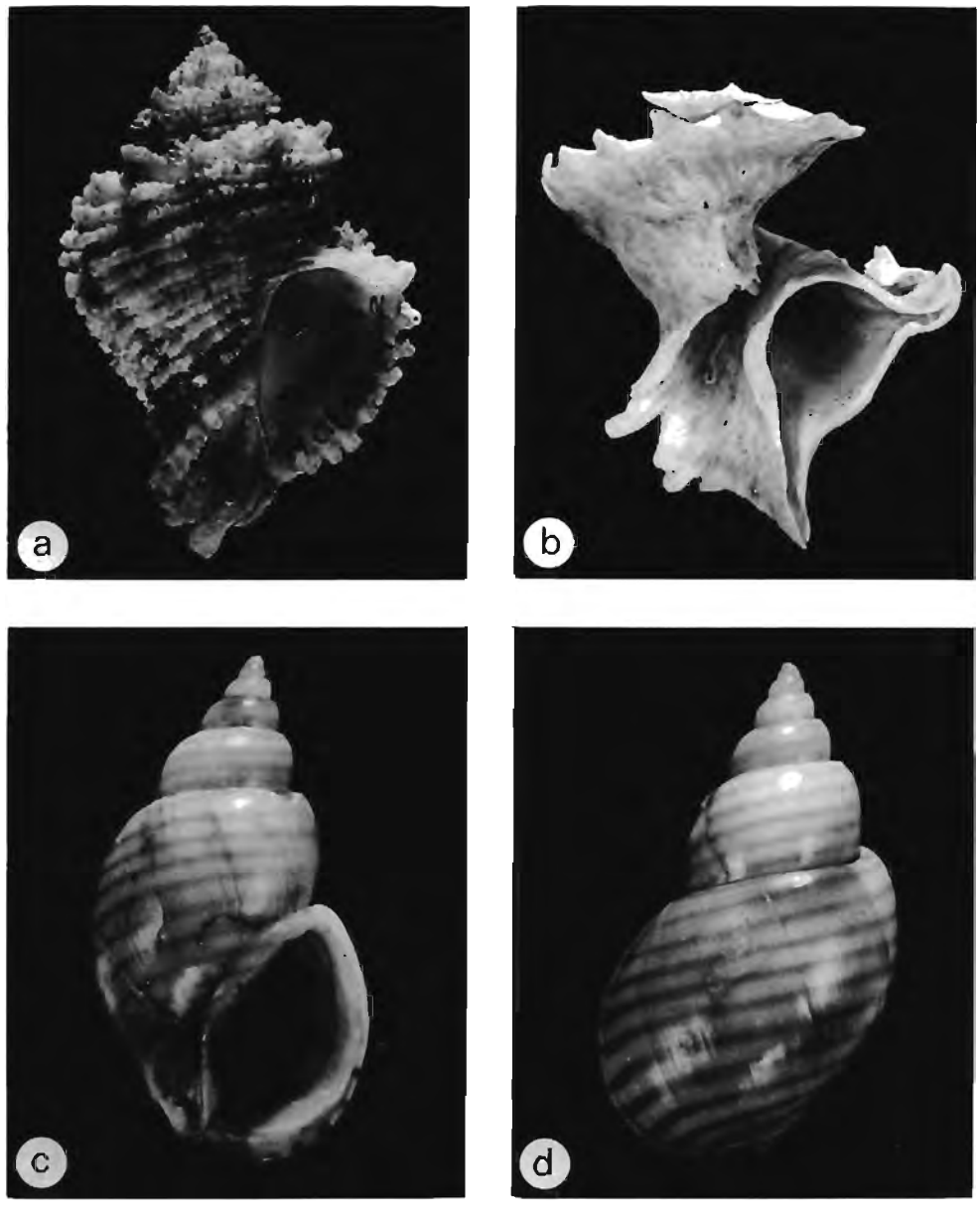

Fig. 9. a, *Latioxis scobina* sp. nov., holotype, dimensions 29,4 × 19,5 mm. b, *Latioxis mawae kylix Barnard*, dimensions 45 × 40,1 mm. c, d, *Babylonia pulchrelineata* sp. nov., holotype, dimensions 29,1 × 16,4 mm.

whorl is almost completely scalariform, enabling the first three teleoconch whorls to be examined in side view). This name may be retained for the Natal subspecies.

The occurrence of *L. mawae* in Natal waters is rendered less surprising by McMichael's 1961 record (p. 52, pl. 4, figs 4,5) of the species from off Queensland and Western Australia. Unfortunately the state of development of spiral sculpture in this material was not mentioned, but the only differences between Australian and Japanese material reported by McMichael concerned coiling and angle of the peripheral lobes, characters of no apparent taxonomic significance.

The two Natal adult shells measure 45×40,1 mm and 37,6×40,4 mm.

Latiaxis scobina sp. nov. Fig. 9 a

Description: Shape globose-fusiform, spire somewhat shorter than aperture; whorls convex, flattened just below suture, forming a strong, but rounded shoulder; sutures deep. Umbilicus deep and moderately wide, columella rather straight, callus thin, erect basally, but not reflected over umbilicus. Aperture rather pyriform in shape, labrum with 9–10 spiral lirae inside. First three apical whorls corroded in both type specimens, protoconch not distinguishable. Fourth whorl with five close-set spiral lirae, the subsutural one being weak, the second one strongest; they are crossed by about 13 thin, imbricate axial lamellae which form squamae at the intersections. These lamellae are gradually reinforced by the development of rounded axial ribs, which number 11–13 on the penultimate whorl; the lamellae become very numerous and irregular, those corresponding to the crests of the ribs being particularly prominent and prickly, especially on the shoulder. In the holotype the axial ribs evanesce a short distance behind the labrum, the lamellae and squamae consequently becoming more uniform in strength. On the penultimate whorl the main spiral lirae still number five, but the intervals are as wide as or wider than the ridges and usually bear single feeble intermediary lirae. On the body whorl there is a total of 15–18 main spirals, plus intermediaries. The whole external surface of the shall, including the squamae, is covered by minute spiral striae, producing with the growth lines a secondary microcancellate sculpture. The fasciolar ridge around the umbilicus is strong and squamose. Colour dirty cream, aperture and columella white.

Dimensions: 29,4×19,5 mm (holotype), 27,6×19,3 mm (paratype, labrum broken).

Distribution: Trawled off Durban in 80 fathoms.

Type material: Holotype (N.M. 9950) and one paratype (9996), both leg. G. Scott.

Remarks: The only closely allied species seems to be *Latiaxis winckworthi* Fulton (1930: 205, text figs 1, 1 a; see also Kira 1962; pl. 26, fig. 15) from Japan. This differs in being markedly broader, with a lower spire, a more conspicuously prominent shoulder angle and more numerous (15–16) axial ribs.

Family Buccinidae

Babylonia pulchrelineata sp. nov. Figs 9 c, d, 10

Description: Spire high, slightly longer than aperture, sutures shallowly canaliculate, whorls convex; surface polished, shell rather thick. Aperture pyriform, rather acute pos-

teriorly, where there is an exceedingly shallow anal notch; outer lip evenly curved. Columella foreshortened, tip acute; columella callus moderately thick, adnate, except where it is reflected over the umbilicus, which remains as a very narrow slit; fasciole slightly concave. Ground colour cream, with thin, brown, slightly oblique spiral lines, which first appear on the second teleoconch whorl where they number three; these lines increase in number to seven on the penultimate whorl, with a total of 11 on the body whorl. Aperture and columella white.

Protoconch deviated from main axis, with an erect first whorl; its limits are not distinguishable, but are assumed to be about 1½, followed by 5 teleoconch whorls; diameter about 1,6 mm.

Dimensions: 29,1 × 16,4 mm (holotype).

Distribution: Known only from the type locality, trawled east of Durban in 150 fathoms.

Type material: Holotype (N.M. 9941), dead, leg./don. G. Scott.

Remarks: Two additional specimens of *B. pulchrelineata* have been seen (in coll. Scott).

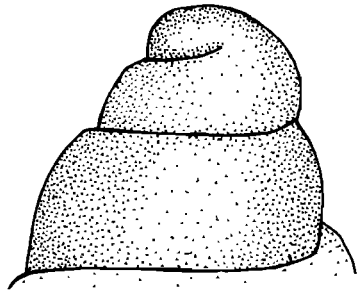

Fig. 10. Apical whorls of *Babylonia pulchrelineata*.

The species is rendered unique in its genus by the colour pattern of thin spiral lines and the small size. In other respects, notably in shape, it is comparable with both species previously known from South Africa. From *B. pintado* Kilburn (1971: 486, figs 3, 7C, E.) it differs in its polished shell, much narrower umbilicus, less foreshortened columella, more curved labrum, shallower anal notch and deviated protoconch; *B. pintado* inhabits shallower waters (just offshore to 27 fathoms). From *B. papillaris* (Sowerby, 1925) it differs in the presence of an umbilicus, a deeper anal sinus, more curved columella, a polished surface and deeper sutures; *B. papillaris* is a Cape species (cf. Kilburn 1971) and has a bathymetric range of 10–36 fathoms, and probably shallower.

Family Columbariidae

Columbarium subcontractum (Sowerby), **comb. nov.** Fig. 12 b.

Fusus subcontractus Sowerby, 1902: 97, pl. 2, fig. 2.
Latirus subcontractus (partim); Barnard, 1959: 82.
Columbarium cf. *formosissimum* Tomlin, 1928; Barnard, 1969: 643, fig. 20 b.

The admirable figures and adequate description given by Sowerby leave no doubt as to the identity of the specimens here recorded. Although no living material is yet available,

on conchological grounds the species may safely be transferred to the genus *Columbarium*. While this was correctly inferred by Barnard (1969), he failed to recognize in his '*Columbarium* cf. *formosissimum*' the *Fusus subcontractus* of Sowerby, a species which he had already listed in 1959 as a *Latirus*, there regarding it as a senior synonym of *L. mosselensis* Tomlin, 1932. As will be evident from the photographs here reproduced, any resemblance between the two is at the most superficial. The main differences may be summarized thus:

	Columbarium subcontractum	*Latirus mosselensis*
Columella pleats:	absent	present
Umbilicus:	absent	present
Colour:	white	pale salmon
Body whorl:	angulate	biangulate
Rostrum:	very slender	fairly broad
Siphonal canal:	almost closed	wide.

In addition, in *L. mosselensis* the spiral sculpture is restricted on later whorls to the crests of the axial ribs in the peripheral region and to the rostrum, while in *C. subcontractum* fine spiral lirae are present throughout, with coarse ones at the periphery. *L. mosselensis* was dredged in shallow water (27 fathoms) off Mossel Bay (southern Cape), while *C. subcontractum* occurs in deep water off Durban (200 fathoms) (Sowerby; Barnard 1969), and off Tongaat in 150 fathoms (Natal. Mus.: G. Scott).

This species does not agree exactly with any of the columbariid taxa recognized by Darragh (1969). There is a superficial resemblance to members of the tertiary fusinid genus *Falsifusus* Grabau, 1904, except that these have a narrowly-conical protoconch of 3–4 whorls; in *subcontractum* the protoconch is of typical columbariid form.

Family Fasciolariidae

Fusinus cratis sp. nov. Figs 11 a, b

Description: Shape narrowly fusiform, spire equal to 0,75—0,79 of length of aperture and canal; whorls strongly convex, periphery median or just above middle, sometimes rounded, but usually weakly angular, slightly impressed just below suture. Labrum with a sinuous edge in lateral view, interior with thin spiral lirae; columella callus thick, edge free and erect throughout, but not forming a false umbilicus; labial wall with traces of weak plicae, strongest in the parietal region, but visible along most of the edge.

Sculpture consists of strong, slightly arcuate axial ribs, 7 on the first teleoconch whorl, increasing to 13–16 on the body whorl; these ribs are initially subequal to their intervals, gradually becoming about twice as wide as the latter, until on the latter half of the body whorl they become subequal again; on the spire whorls they reach the lower suture but evanesce a short distance below the upper suture from about the 4th whorl, and on the body whorl rapidly disappear below the level of the paries. Spiral lirae are conspicuous on both the ribs and (chiefly on account of their colour) in the intervals, they increase from 4 on the first teleoconch whorl to about 14–20 on the penultimate one, in addition to feeble intermediaries, of which there is usually at least a trace of one in each interval; spiral lirae are weakest below the suture, strongest in the peripheral region, with one lira usually sufficiently

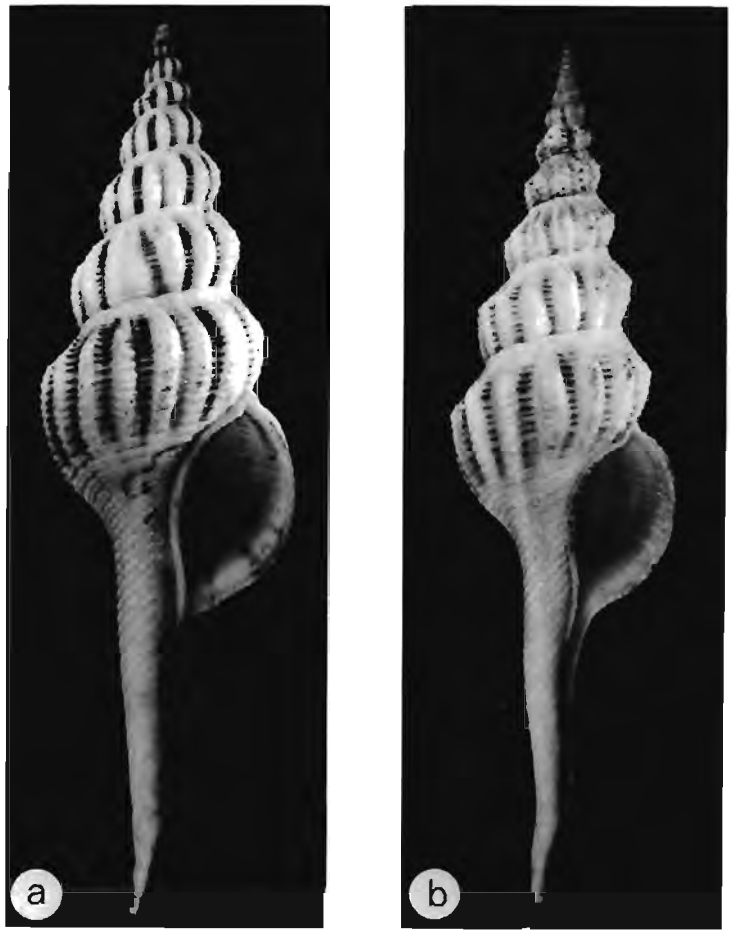

Fig. 11. *Fusinus cratis* sp. nov. a, Paratype, dimensions 128, 8 × 36,9 mm.
b, Holotype, dimensions 121,7 × 32,7 mm.

strongly developed to form a series of small transverse tubercles across the crest of the ribs. Spiral lirae are well-developed on the base and rostrum, consisting of numerous main cords, separated by groups of 1–4 weak intermediaries. Fine growth plicules are present throughout.

Coloration pure white, spiral lirae stained with chestnut-brown where they cross the intervals between the axial ribs. Periostracum thin, olivaceous-brown, velvety.

Teleoconch whorls 10½. Protoconch of 2 whorls, bluntly subcylindrical, apical whorls smooth, deviating from axis, terminating in a few coarse growth lines; diameter 0,95–1,1 mm.

Dimensions: 121,7 × 32,7 mm (holotype); 128,8 × 36,9 mm, 127,8 × 37,2 mm (paratypes).

Distribution: Known only from east of Durban in 230 fathoms.

Type material: Holotype (N.M. 9987); dead, leg./don. G. Scott. Paratypes seven, no. 9995, dead, same data.

Remarks: Fusinus cratis is a moderately large (12 cm), narrowly-fusiform species, with strong axial ribs on all whorls; the presence of conspicuous brown spiral lirae between the axials, contrasting with the otherwise white shell, is characteristic. Examples have circulated for several years among amateur collectors under the name *Fusus torulosus* Lamarck, presumably on account of Barnard's (1959) record of the latter from off Natal and Zululand. However, the fragmentary material so named by Barnard is referable neither to the present species nor to the true *torulosus*, the supposed example of the latter (from 'Ceylon or Indian Ocean') on which he based his identification being in reality *Fusinus forceps* (Perry, 1811) (= *Fusus turriculus* Kiener, 1840). While one of these shell pieces might be comparable with *forceps*, the others show a suture that is far too shallow. Speculation as to the

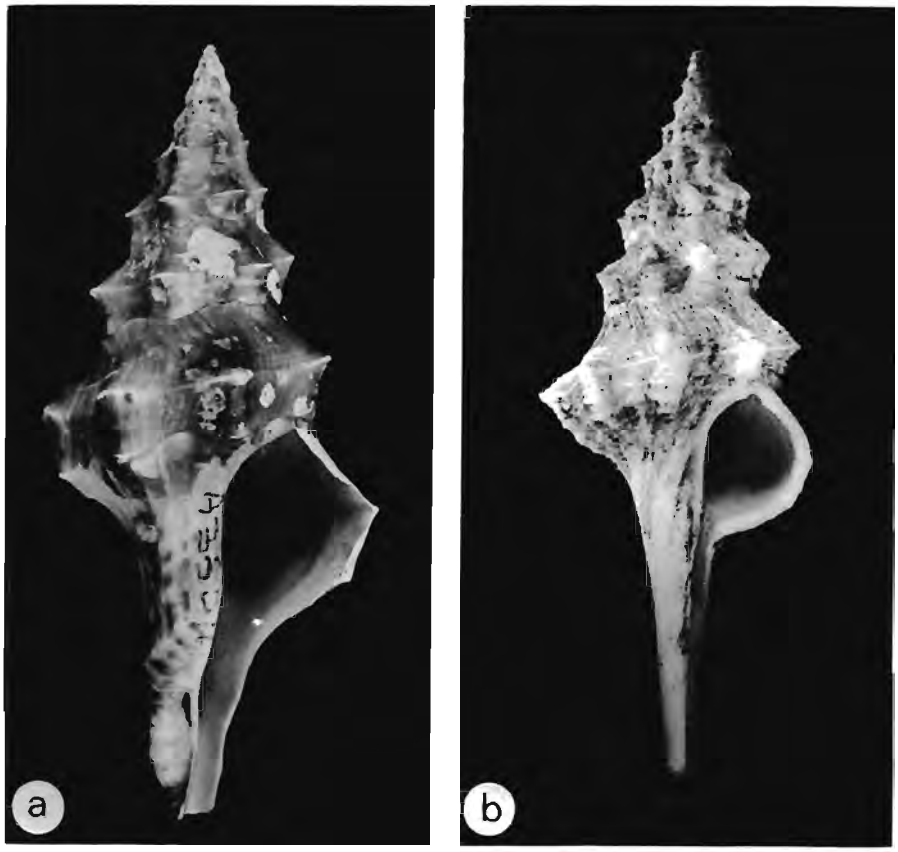

Fig. 12. a, *Latirus mosselense* Tomlin, holotype, South African Museum A 3504, dimensions 53,5 × 23 mm. b, *Columbarium subcontractum* (Sow.) from off Tongaat in 150 fathoms, dimensions 47,3 × 18,4 mm.

identity of such fragmentary remains is pointless. For the record, *F. torulosus* (Lamarck, 1816) is a much broader species than *cratis*, with the whorls distinctly tricarinate at their periphery and the ground colour chestnut, with the peripheral nodules white. It is adequately figured by Lamarck (1816: pl. 423, fig. 4), Reeve (1847: pl. 6, fig. 24) and Sowerby (1880: pl. 407, fig. 9).

The limited series of *Fusinus cratis* that is available indicates the presence of two forms, one relatively narrow with an angular periphery, the other broader with a rounded periphery. The former, which is the commoner, superficially resembles a number of Indo-Pacific species, from most of which it differs in the retention of conspicuous axial ribs on later whorls. The closest appear to be *Fusinus sandwichensis* (Sowerby, 1880) from Hawaii, which is uniform white with coarser spiral lirae (cf. Sowerby 1880: 72, pl. 408 b, fig. 25), and *F. nodicinctus* (Sowerby, 1880) from 'Australia', which has a more abbreviated shell, with conspicuous brown axial strigations reaching the base (Sowerby 1880: 75, pl. 409, fig. 35). The non-angulate form seems to be closest to *Fusinus albinus* (A. Adams, 1855) from Angola, of which a specimen from Great Fish Bay is available for comparison. This has rather similar sculpture to *cratis*, but has a much shorter rostrum and lower spire (e.g. it is less fusiform), and is uniform white in colour.

Family Turridae

Crassispira aesopus (Schepman, 1913) Fig. 13 a

Drillia aesopus Schepman, 1913: 410, pl. 26, fig. 6.

This species was originally described from the entrance to Kwandang Bay (Teluk Kuandang), Celebes, in 72–75 m. Specimens trawled off Durban in 150 fathoms (don. G. Scott) agree exactly with Schepman's excellent description and figure, save for a few unimportant details indicative of individual, bathymetric or geographical variation. These differences lie in the number of axial ribs (14–15 on the penultimate whorl in Durban shells, as against 17) and in the paired interstitial lirae which are here somewhat weak and irregular.

No soft parts are available, but Powell (1966: 76) lists *aesopus* as a probable *Crassispira*, and figures a radula in text fig. D 100, as '?*Crassispira* cf. *aesopus*', from 352 metres in the Banda Sea.

Marshallena philippinarum (Watson, 1882) Fig. 13 b

Marshallena philippinarum; Powell, 1969 (synonymy), pl. 277, fig. 7–11, pls. 278, 279.

M. philippinarum is recorded as ranging through the Western Pacific and Northern Indian Ocean south to the Pemba Island area. A specimen trawled about 100 km due east of Inhaca Island in about 260 fathoms has been presented to the Natal Museum by Mr A. Z. Visagé. Unfortunately the animal was mutilated.

Bathytoma (Parabathytoma) visagei sp. nov. Figs 13 c, d, 14

Description: Fusiform, spire distinctly longer than aperture, base rather truncated. Sutures moderately deep, whorls angular at periphery which lies in midwhorl. Anal sinus deep, narrowly U-shaped, margins divergent at opening, situated on periphery. Columella with a thin, microscopically granulose callus, which is slightly sunken below the level of the

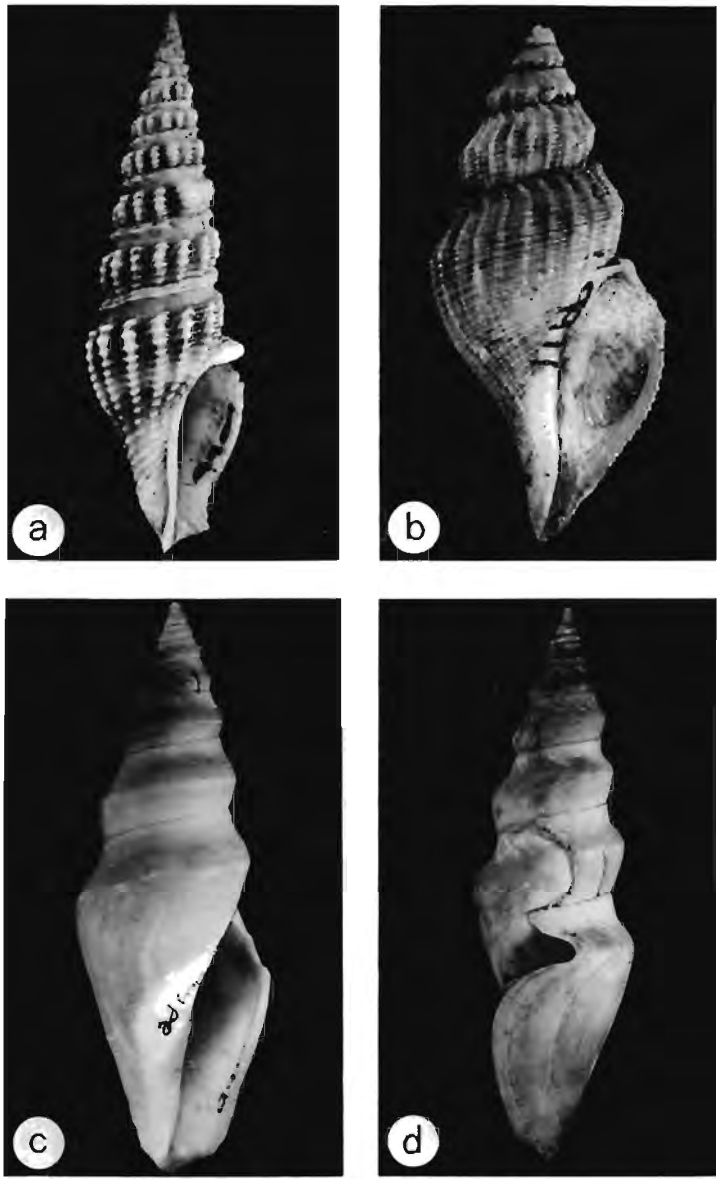

Fig. 13. a, *Crassispira aesopus* (Schepman) from off Durban in 150 fathoms, 42,5 × 12,2 mm. b, *Marshallena philippinarum* (Watson), off Inhaca in about 260 fathoms, dimensions 30,9 × 13,6 mm. c, *Bathytoma visagei* sp. nov., holotype, 46,6 × 16,1 mm. d, Paratype of same, dimensions 56,6 × 18 mm.

adjacent surface; in some specimens the columella bears a weak, rounded oblique pleat medially. Siphonal canal very shallow with an oblique, barely indented terminal notch.

Teleoconch whorls $8\frac{1}{2}$. First whorl with two series of about 21 granules, of which the peripheral series is strong, the subsutural one weak. By the end of this whorl two feeble lirae have developed between the peripheral granules, and the subsutural ones are raised on a weak ridge. By the third whorl the subsutural granules have become oblique and somewhat pliculate, the peripheral lirae have increased to three and the shoulder slope bears 3 or 4 very weak spiral lirae, plus another 4 on the base of each whorl. By the fourth whorl the sculpture becomes weak, the peripheral nodules being little more than oblique crenules. Subsequent whorls are sculptureless, save for sinuous growth lines and very faint traces of numerous fine spiral striae on the shoulder slope, with stronger but still obscure striae on the lower half of the body whorl.

Colour light brownish-buff, darker at the periphery, protoconch and first two or three whorls pale; columella callus and aperture white.

Protoconch of $1\frac{1}{2}$ whorls, resembling that of *B. regnans* Melvill (cf. Kilburn 1971: 131, fig. f), although no spiral striae are visible in the only perfect example available; diameter 1,4 mm.

Dimensions: 46,6 × 16,1 mm (holotype); 56,6 × 18 mm (paratype).

Operculum leaf-shaped, growth lines rough, concentric, nucleus near anterior end (not terminal), amber coloured, length 5,5 mm in both type specimens (aperture lengths 24,9 and 20,3 mm).

Radula very similar to that of *B. regnans* (op. cit. fig. 2 c).

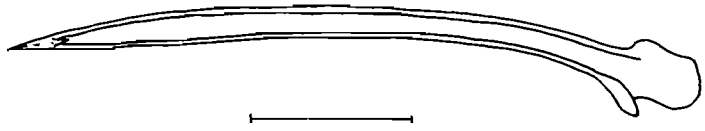

Fig. 14. Radula tooth of *Bathytoma visagei*; line = 0,2 mm.

Distribution: So far known only from off Ponta Zavora, Moçambique (24° 31′ S.), in 260-280 fathoms.

Type Material: Holotype (N.M. 9912) and one paratype (N.M. 9999), both live taken, don. A. Z. Visagé. Radula slide (holotype) M106.

Remarks: Bathytoma visagei is a distinctive species, characterized by the almost total obsolesence of sculpture on later whorls. In this character, it resembles *B. engonia* (Watson, 1881) from Japan, and *B. paregonia* Dell, 1956, from New Zealand, the only known representatives of the subgenus *Riuguhdrillia* Oyama, 1951 (fidé Powell 1966: 64). Both, however, retain traces of peripheral nodules on later whorls and possess a persistent periostracum, which is apparently absent in *visagei*. Moreover, the radula teeth appear to differ from those of *B. parengonia* in the presence of small but distinct barbs. The latter character suggests that *Parabathytoma* Shuto, 1961, is a more suitable subgeneric location.

Within the genus *Bathytoma* the brown coloration and contrasting white columella of

visagei appear to be shared only by the Caribbean *B.* (*B.*) *viabrunnea* (Dall, 1889), which differs markedly in shape and sculpture. As in that species the presence or absence of a columella pleat is here a matter of individual variation. The anterior but non-terminal nucleus of the operculum adds another form to the range already recorded for the genus *Bathytoma* (cf. Kilburn 1971: 132).

The present species is named in honour of the collector, Mr A. Z. Visagé of Durban.

Family Conidae

Conus orbignyi aratus subsp. nov. Figs 15 a–c, 16

Conus orbignyi Audouin; Barnard, 1969: 598, fig. 2.

Description: Form and spire sculpture as in *C. orbignyi orbignyi* Audouin, 1831, from Japan and the South China Sea, except that anterior to the shoulder the body whorl appears

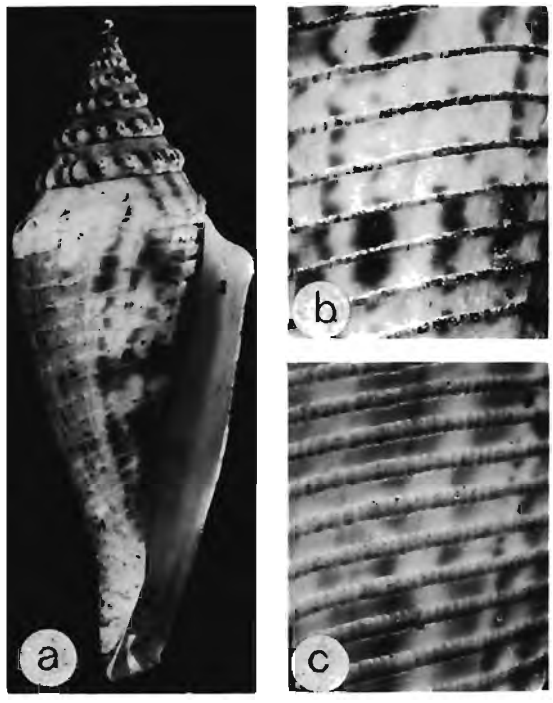

Fig. 15. a, *Conus orbignyi aratus* subsp. nov., holotype, dimensions 60×21,8 mm. b, c, Enlarged sculpture of (b) a paratype of *C. o. aratus* and (c) an example of *C. o. orbignyi* Audouin from Japan.

superficially to be smooth, save for a series of narrow spiral grooves; these are often obsolete for a short distance below the shoulder, and may even be restricted to the anterior half of the whorl. These grooves represent the intervals between exceedingly low, smooth and wide spiral ridges, of which there are a total of 22–32; these become fine and lirulate on the rostrum. The intervals throughout are crossed by fine axial plicules, producing a foveolated appearance. In contrast, in *Conus orbignyi orbignyi* the sculpture is obviously lirate, the lirae

being only two or three times the width of the intervals. Because of the proportionally wider intervals the axial brown streaks and blotches tend to be more broken in *o. orbignyi* than in *o. aratus*.

Dimensions: 60×21,8 mm (holotype); 62,4×22 mm, 59×19,7 mm, 54,8×22,4 mm (paratypes).

Distribution: On mud in 150–170 fathoms in the Tongaat-Umhlanga Rocks area.

Type material: Holotype: (N.M. A3), off Tongaat in 150 fathoms (don. G. Scott). Paratypes: (N.M. A4), same data, 60, in alcohol; N.M. 6174, off Umhlanga Rocks in 164–169 fathoms, don. R. Cruickshank. Paratypes will be distributed to various overseas institutes.

Remarks: Although so far known from only a restricted area off Natal, a very large number (over and above the type series) have been examined, showing the characters set out above to be absolutely constant within the limits here defined. Subspecific status is undoubtedly warranted.

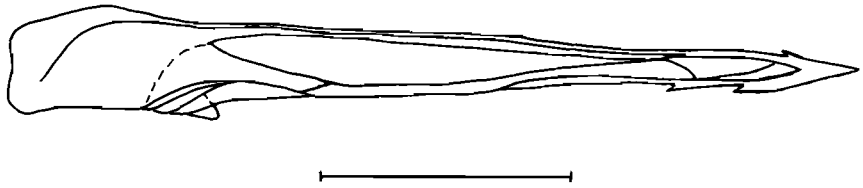

Fig. 16. Radula tooth of *Conus orbignyi aratus*. Line = 0,1 mm.

It is noteworthy that *Conus orbignyi* was recorded from the Persian Gulf/Mekran coast area by Melvill & Standen (1901: 431). Re-examination of his material would be of the greatest interest. Comparison with the type specimen (if extant) of *Conus planicostatus* Sowerby, 1833, is also desirable. The latter species is known only from Sowerby's original figures (1833: fig. 15), which show a colour pattern of simple spirally-arranged spots, rather than interrupted axial bands, and the spiral sculpture also seems to be finer than in *aratus*; the spire of the latter is rarely as low as in Sowerby's figure.

The animal of *C. o. aratus* is pale yellow, with the sides of the foot and the siphon lightly speckled with blackish-brown. An operculum is absent. Radula tooth tapering rather rapidly, blade short, posteriorly hooked, opposite side with small, twin barbs, waist distinct, shaft with a thin keel posterior to level of waist on the side bearing the blade; base with a well-developed spur (terminology after Nybakken 1970).

CLASS BIVALVIA

Family Mytilidae

Amygdalum politum (Verrill & Smith, 1880)

Amygdalum politum; Knudsen, 1967: 269 (references and synonymy), text fig. 14.

This deep-water mytilid, widely distributed in both the Atlantic and Indo-West Pacific, has previously been recorded from as far south as the Zanzibar area (Thiele & Jaeckel 1931). Living specimens have been presented to the Natal Museum from east of Durban and off Monte Belo (Limpopo River mouth area), in 230 fathoms, by Mr G. Scott,

who has noted that they are commonly attached in groups by means of byssal threads, and are always trawled in association with *Nephrops andamanicus*.

Family Poromyidae

Poromya (*Poromya*) *gloriosa* Prashad, 1932. Fig. 17

Poromya (*Cetoconcha*) *gloriosa* Prashad, 1932: 326, p. 7. figs 29, 30.
Poromya (*Poromya*) *gloriosa*; Odhner, 1960: 73.

Although Prashad's description and illustrations contain no hinge details (other than the statement 'hinge normal') the strongly rostrate posterior end seems to be characteristic among Indo-Pacific species. The holotype, apparently hitherto unique, was trawled at a depth of 247 metres just east of Flores, Indonesia. A single dead but still articulated specimen in the Natal Museum collection (leg. G. Scott) was trawled in 20 fathoms on the Tugela bank, a considerable extension of the range.

Fig. 17. *Poromya gloriosa* Prashad, from the Tugela bank in 20 fathoms, left valve, dimensions 35,2 × 26,4 mm.

Odhner (loc cit.) has pointed out that anatomical data are necessary before a member of the Poromyidae can be allocated with certainty to either *Poromya* or *Cetoconcha*. For the present it may be noted that hinge details of *gloriosa* agree well enough with those of the type species of *Poromya*, *granulata* (Nyst & Westendorp, 1839) (figured by Tebble 1966: text fig. 107). I have therefore followed Odhner in referring it to *Poromya* s.s.

The following details, based on the Tugela shell, may be added to Prashad's account: Pallial sinus very shallow. Right valve with a fairly strong cuneiform cardinal tooth, fitting into a corresponding socket in the left valve. No lateral teeth, although in each valve the thickened resilifer, lying parallel to the hinge margin, almost simulates a posterior lateral, and the anterior dorsal margin of the valve projects inwards, suggesting an anterior lateral. Resilium normal, ligament proper brilliant scarlet in colour, extending from the umbo almost to the posterior end of the dorsal margin. Dimensions 35,2 × 26,4 × 19,7 mm.

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